Annual GHG Reduction Metrics

The annual GHG reduction metrics listed below are meant to aid other local governments in calculating the associated GHG reductions for their own municipal GHG reduction measures. The annual reduction metrics are provided in the form of a per-unit average that can be applied to the individual data of other local governments. For example, the following metric suggests that a similar local government could expect annual reductions of 1.21 kWh of electricity and 0.116 therms of natural gas per square foot of building if it were to implement a direct digital control program for HVAC systems in its municipal buildings.

T DITECT CICITAL CONTROL OF DIVAC Systems	* 1.21 kWh per square foot of building
	* 0.116 therms per square foot of building

Note that the use of these metrics by other local governments presumes that the local governments' buildings and fleet/employee driving patterns are similar to those of Contra Costa County. In particular, note that over 60-percent of County employees commute more than 10 miles to work, and 30-percent commute over 20 miles. This should be taken into consideration before the employee commute metrics are used by other local governments. See MCAP Appendix B: Assumptions and Calculations for sources and methodology.

MEASURE	ANNUAL GHG REDUCTION
Energy Efficiency, Renewable Energy, and Green Building	
Direct digital control for HVAC systems	* 1.21 kWh per square foot of building * 0.116 therms per square foot of building
Heat recovery projects	* 0.195 kWh per square foot of building * 0.011 therms per square foot of building
Energy demand response programs	* 28.8 kWh per kW reduction capacity
Variable frequency motor drive technology	* 27,269 kWh per building
Vending misers on vending machines	* 1,460 kWh per vending machine
LED building exit signs	* 85-percent of sign electricity use
LED traffic and pedestrian signals	* 85-percent of signal electricity use
Cool roofing systems	* Seven percent of total building electricity use
Thermally resistant window films	* 12-percent of total building energy use
Lighting improvement program	* 1.18 kWh per square foot of building
Cogeneration plants for 24-hour buildings	* 4.24 kWh per square foot of building
HVAC improvement and retrofit program	* 1.25 kWh per square foot of building * 0.055 therms per square foot of building
Employee energy awareness program	* Five percent of total building energy use
LED streetlights	* 85-percent of lighting electricity use
Solar Photovoltaic systems	* 1,156 kWh per kW of installed capacity
Environmentally Preferable Purchasing	
Energy Star copiers	* 50-percent of copier electricity use
EPEAT certified desktop computers	* Calculator available at http://www.epeat.net/FastBenefits.aspx

Vehicle Fleet	
B20 biodiesel fleet	* 1.47 MTCO2e per diesel vehicle
Electric fleet	* 832 gallons of gasoline reduced per vehicle * 29,103 kWh of electricity added per vehicle
Hybrid fleet	* 2.40 MTCO2e per hybrid vehicle
CNG fleet	* 1.28 MTCO2e per CNG vehicle
E85 ethanol fuel fleet	* 7 MTCO2e per E85-fueled FlexFuel vehicle
Employee Commute	
Vanpools	* 1,904 MTCO2e per % of employees * 22.6 MTCO2e per employee
Bike to work	* 236 MTCO2e per % of employees * 2.80 MTCO2e per employee
User fee for parking spaces	* 478 MTCO2e per % of employees * 5.67 MTCO2e per employee
Pre-tax mass transit or carpool program	* 478 MTCO2e per % of employees * 5.67 MTCO2e per employee
Compressed work weeks	* 26.2 MTCO2e per % of employees * 0.310 MTCO2e per employee
Telecommuting	* 155 MTCO2e per % of employees * 1.84 MTCO2e per employee
Waste Reduction and Recycling	
Office paper recycling	* 8.17 tons per building
Beverage container recycling	* 0.06 tons per park or building
Default duplex copying and printing machines	* 0.033 tons of paper per machine

This & companion documents are available on-line at http://www.cccounty.us/toolkit.

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